Please amend the claims as follows:

1. (currently amended) A method to increase the safety integrity level of a ~~Controller (10)~~ controller for control of real world objects, ~~characterized by,~~ the method comprising:

attaching to the ~~said~~ single ~~(1-channel) Controller (10)~~ controller a safety-hardware unit ~~(11)~~ wherein the safety hardware unit ~~(11)~~ communicates with ~~the said Controller's CPU~~ a central processing unit of the controller,

downloading safety-related configuration data and/or diagnostic information to the attached safety-hardware unit ~~(11)~~ and downloading the control function software to the ~~Controller (10)~~ controller,

configuring the attached safety-hardware unit ~~(11)~~ to execute logic, which depends on the downloaded safety-related configuration data and/or diagnostic information, and in an active or passive way set ~~the Controller's (10)~~ output values of the controller to a safe state for online safety control.

2. (currently amended) ~~A~~ The method according to claim 1, ~~characterized in that~~ wherein the ~~Controller (10) have~~ controller has the capability of executing a set of non-safety critical control functions, which set of non-safety critical control functions is the same before as well as after the safety hardware unit ~~(11)~~ is attached.

3. (currently amended) ~~A~~ The method according to claim 2, ~~characterized in that~~

wherein the configuring ~~step comprise the additional steps or~~ comprises:

downloading to the attached safety hardware unit ~~(11)~~ diagnostic information, which previously was automatically generated by a software tool as a result of user's configuration of the ~~Controller (10)~~ controller and which diagnostic information is used in the attached safety hardware unit ~~(11)~~ during safety critical control.

4. (currently amended) ~~A~~ The method according to ~~any previous claim, characterized in that~~ claim 1, wherein access to a plurality of input and output values of a real world object is obtained through a bus ~~(14)~~ connected between the ~~Controller (10)~~ controller and to an input/output unit ~~(15)~~ and the validity of the bus ~~(14)~~ communication is verified in the attached safety hardware unit ~~(11)~~.

5. (currently amended) ~~A~~ The method according to ~~any previous claim, characterized in that~~ claim 1, wherein the timing supervision of the ~~Controller (10)~~ controller is verified in the attached safety hardware unit ~~(11)~~.

6. (currently amended) ~~A~~ The method according to ~~any previous claim, characterized in that~~ claim 1, wherein correct sequence of code logic is verified in the attached safety hardware unit ~~(11)~~.

7. (currently amended) ~~A~~ The method according to ~~any previous claim, characterized in that~~ claim 1, wherein correctness of memory content of the controller ~~(10)~~ is verified in the attached safety hardware unit ~~(11)~~.

8. (currently amended) ~~A~~ The method according to ~~any previous characterized in that~~ claim 1, wherein a download of new control functionality logic to the ~~Controller~~ controller is verified in the attached safety hardware unit ~~(11)~~.

9. (currently amended) ~~A~~ The method according to ~~any previous claim, characterized in that~~ claim 1, wherein the attached safety hardware unit ~~(11)~~ performs checks in order to allow only users logged on as safety classified engineers and safety classified operators to modify the control functionality logic and parameters.

10. (currently amended) ~~A~~ The method according to claim 4, ~~characterized in that~~ wherein the bus ~~(14)~~ communication verification logic in the attached safety hardware unit ~~(11)~~ is implemented diverse.

11. (currently amended) ~~A~~ The method according to claim 4, ~~characterized in that~~ wherein the attached safety hardware unit ~~11~~ is diverse generating a safety related header for the bus ~~(14)~~ communication.

12. (currently amended) ~~A~~ The method according to claim 11, ~~characterized in that~~ wherein the ~~Input/Output~~ input/output unit ~~(15)~~ has two diverse implementations each verifying the correctness of the bus ~~(14)~~ traffic and each generating a safety related header for the bus communication.

13. (currently amended) ~~A~~ The method according to ~~any previous claim, characterized in that~~ claim 1, wherein the attached safety hardware unit ~~comprise~~ comprises a first and a second module in a redundant configuration, the second module is updated with data that exists first module at the time of a failure and the second module takes over the safety related control of the control system from the first module if a failure of the first module is detected.

14. (currently amended) ~~A~~ The method according to claim 13, ~~characterized in that~~ wherein the ~~a~~ redundant ~~Controller~~ controller unit is attached to the ~~Controller (10)~~ controller, which takes over in case of a failure of a primary ~~Controller~~ controller and the redundant ~~Controller~~ controller unit establish communication with either the active first module or the active second module of the attached safety hardware unit.

15. (currently amended) A single or 1-channel ~~Control System (20)~~ control system intended for safety-related control of real-world objects, comprising: ~~characterized in that,~~

a single main ~~CPU~~ central processing unit handling the main processes of a ~~Controller (10)~~ controller,

an attached safety-hardware unit ~~(11)~~ comprising means to increase the safety-integrity level of the ~~Controller~~ controller and comprising means to set ~~the Controller's~~ output values of the controller in a safe state for online safety control.

16. (currently amended) ~~A Control System~~ The control system according to claim 15, ~~characterized in that~~ wherein the ~~Controller (10) have~~ controller has the capability of executing a set of non-safety critical control functions, which set of non-safety critical control functions is

the same before as well as after the safety hardware unit is attached.

17. (currently amended) ~~A Control System~~ The control system according to claim 16, ~~characterized in that it comprises,~~ further comprising:

means for downloading to the attached safety hardware unit diagnostic information, which previously was automatically generated by a software tool as a result of user's configuration of the ~~Controller~~ controller and which diagnostic information is used in the attached safety hardware unit during safety critical control.

18. (currently amended) ~~A Control System~~ The control system according to claim 17, ~~characterized in that it comprises~~ further comprising:

an input/output unit ~~(15)~~ connected to the ~~Controller (10)~~ controller by a bus and the validity of the bus ~~(14)~~ communication is verified in the attached safety hardware unit.

19. (currently amended) ~~A Control System~~ The control system according to claim 18, ~~characterized in that~~ wherein the bus ~~(14)~~ communication verification logic in the attached safety hardware unit ~~(11)~~ is implemented diverse.

20. (currently amended) ~~A Control System~~ The control system according to claim 19, ~~characterized in that~~ wherein the attached safety hardware unit ~~(11)~~ is diverse generating a safety related header for the bus ~~(14)~~ communication.